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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,482	03/31/2004	Toshiharu Furukawa	ROC920030399US1	6082

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EXAMINER	
GOODWIN, DAVID J	

ART UNIT	PAPER NUMBER
2818	

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/814,482	FURUKAWA ET AL.	
	Examiner	Art Unit	
	David Goodwin	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1 through 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (US 6,117,711) in view of Forbes (US 2004/0217391).

1. Regarding claim 1

2. Wu teaches a semiconductor device. Said device comprises an island of semiconductor material including a plurality of sidewalls on a handle wafer (2). An insulating layer (8) disposed between said island and said handle wafer (2). Said insulating layer electrically insulating said island of said semiconductor material from said handle wafer (2) (fig 6) (column 3 lines 20-65)

3. Wu does not teach that the insulating layer comprises a thickened region that will stress the island.

4. Forbes teaches a semiconductor device. Said device comprises a substrate (704) and an active layer (712). Said active layer (712) having a strained region (paragraph 0043). An insulating layer (710) disposed between the substrate (704) and the active layer (712), said insulating layer having a thickened region underlying the strained region and exerting a tensile strain thereon (fig 7) (paragraph 0043).

5. It would have been obvious to one of ordinary skill in the art to form a thickened section in the insulation layer in order to stress the overlying semiconductor thereby increasing the carrier mobility.

6. Regarding claim 2.

7. Wu teaches that said insulating layer is a buried oxide and said active layer is silicon (column 3 lines 20-50).

8. Regarding claim 3.

9. Wu teaches that said device further comprises a source (18) defined in said active layer and a drain (18) defined in said active layer (fig 6) (column 3 lines 55-67). A channel is defined between the source (18) and drain (18) a disposed in said island region of said active layer (fig 6).

10. Regarding claim 4.

11. Wu teaches a gate electrode (16) is formed over the active layer and defining a channel. Said electrode (16) is electrical isolated from said active layer (fig 6) (column 3 lines 55-67).

12. Regarding claim 5.

13. Forbes teaches that the strained region divides the gate electrode (728) (fig 7).

14. It would have been obvious to one of ordinary skill in the art to form a thickened section in the insulation layer in order to stress the overlying semiconductor thereby increasing the carrier mobility.

15. Regarding claim 6.

16. Wu teaches that the gate electrode (16) overlies the channel (fig 6) (column 3 lines 55-65).

17. Regarding claim 7.

18. Wu teaches that the active layer comprises part of a semiconductor device (fig 6).

19. Regarding claim 8.

20. Wu teaches that the active layer is silicon the insulating layer (8) is oxidized silicon (column 3 lines 30-50).

21. Regarding claim 9.

22. Wu teaches that the insulating layer is silicon dioxide (column 3 lines 30-50).

23. Regarding claim 10.

24. Forbes teaches that the substrate is silicon and the thickened region is oxidized substrate (paragraph 0043).

25. It would have been obvious to one of ordinary skill in the art to form a thickened section in the insulation layer in order to stress the overlying semiconductor thereby increasing the carrier mobility.

26. Regarding claim 11.

27. Forbes teaches that the tensile stress is sufficient to enhance electron mobility (paragraph 0041).

28. It would have been obvious to one of ordinary skill in the art to form a thickened section in the insulation layer in order to stress the overlying semiconductor thereby increasing the carrier mobility.

29. Regarding claim 12.

30. Forbes teaches that the oxide layer is thickened is about 100 angstroms thick (paragraph 0041).

31. It would have been obvious to one of ordinary skill in the art to form a thickened section in the insulation layer in order to stress the overlying semiconductor thereby increasing the carrier mobility.

32. Regarding claim 13.

33. Forbes teaches that the thicker region is thicker then the surround regions of insulating layer (fig 7).

34. It would have been obvious to one of ordinary skill in the art to form a centrally thickened section in the insulation layer in order to stress the overlying semiconductor thereby increasing the carrier mobility.

35. Regarding claim 14.

36. Forbes teaches that first and second anchor regions disposed on each side of the strained region prevent the strained section from relaxing (fig 7).

37. It would have been obvious to one of ordinary skill in the art to form a thickened section in the insulation layer in order to stress the overlying semiconductor thereby increasing the carrier mobility.

38. Regarding claim 15.

39. Forbes teaches that said first and second anchor regions comprise adjacent regions of active layer flanking the strained region (fig 7).

40. It would have been obvious to one of ordinary skill in the art to form a thickened section in the insulation layer in order to stress the overlying semiconductor thereby increasing the carrier mobility.

Response to Arguments

41. Applicant's arguments with respect to claims 1 through 15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

42. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Goodwin whose telephone number is (571)272-

8451. The examiner can normally be reached on Monday through Friday, 9:00am through 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571)272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJG

Primary Examiner